

## CLAIM(S)

1. An air cooling dry vacuum pump comprising rotors to be rotated by a motor, a driving source of rotation, in a casing having an inlet and an outlet for the fluid, said casing being  
5 provided with air supplying means at one end in an axial direction thereof, and formed into a duplex tube structure with an inner tube and an outer tube therearound, and that an air duct, through which cooling air flows as being supplied by the air supplying means, along the axial direction between the inner  
10 tube and the outer tube.
2. The air cooling dry vacuum pump according to claim 1, wherein said air duct is provided along the axial direction corresponding to a heat generating member including the motor, rotational force transmission parts such as a rotating speed  
15 up gear for transmission of a driving force from the motor to the rotor, a timing gear and the like, a roller bearing supporting rotatably a shaft of the rotor, and rotors engaging with each other, and heat generated from the heat generating member flows conventionally with cooling air flowing through  
20 the air duct by the air supplying means for heat exchange.
3. The air cooling dry vacuum pump according to claim 1 or 2, wherein said air supplying means is a ventilation fan or a suction fan.
4. The air cooling dry vacuum pump according to claim 1, 2 or  
25 3, wherein said casing for receiving the rotors, a rotating speed up gear section for receiving the rotating speed up gear

as the rotational force transmission parts, and a timing gear section for receiving the timing gear structure the air duct cooperatively by being connected through a connecting member between the inner tube and the outer tube of the duplex tube structure.

5     5. The air cooling dry vacuum pump according to claim 1, 2, 3 or 4, wherein said rotating speed up gear section and the timing gear section are constructed into upper/lower two sections separated by a partition wall, and the two sections are  
10   communicated through a path with each other so as to be capable of circulating lubrication oil by convection.

6. The air cooling dry vacuum pump according to claim 1, 2, 3, 4 or 5, wherein said rotor is mounted on a rotor shaft, one end of which is rotatably supported by a first roller bearing  
15   placed at the timing gear section as being fixed on one side of the casing.

7. The air cooling dry vacuum pump according to claim 1, 2, 3, 4, 5 or 6, wherein said rotor is mounted on the rotor shaft so as to approach to an other side of the casing, which is  
20   provided with the inlet and is sealed, and the other end of the rotor shaft is supported rotatably by a second roller bearing placed at a support cylinder with a small diameter, which is fixed on the one side of the casing.

8. The air cooling dry vacuum pump according to claim 1, 2,  
25   3, 4, 5, 6 or 7, wherein an outer wall of at least one of said casing, the motor and the air supplying means is covered with

a sound absorbing material.